



Translation

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 03R00148/PC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP2003/004727	International filing date (day/month/year) 14 April 2003 (14.04.2003)	Priority date (day/month/year) 16 April 2002 (16.04.2002)
International Patent Classification (IPC) or national classification and IPC G09F 9/30, G02F 1/1368, H01L 29/786		
Applicant SHARP KABUSHIKI KAISHA		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 08 July 2003 (08.07.2003)	Date of completion of this report 05 February 2004 (05.02.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/004727

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1-22, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages 4-9, 11-12, 15, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 1, 10, filed with the letter of 25 December 2003 (25.12.2003)
- ☒ the drawings:
 pages 1/8-8/8, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

- These elements were available or furnished to this Authority in the following language _____ which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☒ the claims, Nos. 2, 3, 13, 14
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1, 4-12, 15	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1, 4-12, 15	NO
Industrial applicability (IA)	Claims	1, 4-12, 15	YES
	Claims		NO

2. Citations and explanations

Claims 1, 4-7, 9-11 and 15

The "aluminum alloy layer 8" and the "molybdenum alloy layer 9" of the inventions described in document 1 cited in the ISR [JP, 2000-284326, A (Hitachi, Ltd.), 13 October, 2000] respectively correspond to the "metal film" and "protective film" of the inventions of this application.

Document 1 (Par. Nos. [0050]-[0055]) states that "aluminum alloy layer 8" and "molybdenum alloy layer 9" are wet etched together. Document 1 also describes setting the etching rate of the "molybdenum alloy layer" to be slightly faster than that of the "aluminum alloy" in order to make the end surface forward tapered shape.

Document 1 (Par. Nos. [0061]-[0067]) also describes lowering the etching rate of "molybdenum alloy layer 8" to prevent the "aluminum alloy layer 8" from appearing when a through hole is formed by dry etching.

This application states that the etching rate for a "metal film" and "protective film" is roughly equal for "first etching" for forming the "metal film" and a "protective film" and this is understood to be roughly equivalent to saying that they can be wet etched together. This examination finds that, in the inventions described in document 1 too, the etching rates are roughly equivalent to the extent that they can be wet etched together. Moreover, changing the etching rate to change the end surface shape is well known, and changing the rate accordingly is a matter of design for a party skilled in the art.

Furthermore, in the inventions of this application, the etching rate of a second etching of a protective film for forming a contact hole is almost zero. However, because this examination finds that document 1 describes the point about lowering the etching rate of the protective film to prevent the metal film from appearing, it appears that the lower the etching rate of the second etching of the protective film, the more likely is it that this goal will be reached, and it is easy for a party skilled in the art to conceive that roughly zero in particular would be desirable.

Moreover, the "metal film" and the "amorphous oxide conductive film" of the inventions described in document 2 cited in the ISR [JP, 2000-275663, A (Hitachi, Ltd.), 06 October, 2000] respectively correspond to the "metal film" and "protective film" of the inventions of this application.

This examination finds that in document 2, Par. No. [0057] describes using molybdenum as a metal film, Par. No. [0043] describes using an oxide such as indium oxide and a zinc oxide as a protective film, and Par. Nos. [0045] and [0057] describe the metal film and protective film as capable of being wet etched together. Using the film described in document 2 as the metal film and protective film described in document 1 is something that a party skilled in the art can easily conceive of.

Therefore, the novelty of the inventions relating to claims 1, 4-7, 9-11 and 15 is refuted based on documents 1 and 2.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of Box V. 2:

Claims 8 and 12

As described in document 3 [JP, 8-018058, A (Frontec Inc.), 19 January, 1996, Par. Nos. [0032]-[0034], Figs. 8-9] and document 1 (Par. No. [0062]), simultaneously forming a contact hole that communicates with a drain electrode and a contact hole that communicates with a gate circuit by dry etching is well known, and applying said well-known matter to the inventions described in documents 1 and 2 is something that a party skilled in the art can easily conceive of.

Therefore, the inventive step of the inventions relating to claims 8 and 12 is refuted based on documents 1-3.